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Comparison of the immediate effect of variable and constant three point pressure knee orthosis on the adduction moment of the knee joint in patients with medial knee osteoarthritis

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Aim: The immediate effect of a novel designed variable pressure knee orthosis on leg adduction moment in patients with medial compartment knee osteoarthritis was compared with the effect of ordinary constant pressure knee orthosis.

Methodology: Fifty patients (age: 60.9 ± 7.5 , 25 female and 25 male) with primary medial knee osteoarthritis were recruited through simple convenient sampling method. A variable pressure knee orthosis was designed including two air cuffs that were connected with a narrow plastic tube. One cuff is mounted on the heel area of the patients shoe and the other cuff on the lateral side of the knee orthosis at the level of knee joint line. The medial directed pressure at the knee joint was variable and related to the amount of vertical load of body weight that was applied to the heel cuff. The vertical distance of foot center of pressure to lateral border of the foot was measured before and after wearing the knee orthosis during single and double stance. A foot scan was used for the measurements. The changes of the distance between the center of pressure and lateral border of foot are correlated with the amount of the adduction moment on the knee joint.

Results: The vertical distance between foot center of pressure and lateral border of foot was statistically significant between single limb and double limb support ($p=0.001$), before and after wearing variable pressure knee orthosis ($p=0.001$) and static pressure knee orthosis ($p=0.03$). The difference between both knee orthosis was also significant ($p=0.002$).

Conclusion: The variable pressure knee orthosis can reduce the adduction moment of the knee joint more than ordinary static pressure knee orthosis.

Biography

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